II. Amendments to the Specification

Kindly amend the specification as follows:

The paragraph starting from lines 4-6 on page 8:

A1

Computer 32 also includes a transducer scanning control module ~~98~~ 96 which provides output signals to controller 40 to actuate the transducer actuating assembly. Transducer scanning control module ~~98~~ 96 receives input from user interface module 84.

The paragraph starting from lines 3-15 on page 11:

A2

Prior to performing axial scanning, the degree of in-plane and out-of-plane tilt of the transducer, as well as the degree of out-of-plane displacement of the transducer are also pre-measured and this information is stored in the data set. In-plane tilting is the angle that the axis of rotation, projected onto each image plane, makes with a vertical centerline of the image plane. Out-of-plane tilting offsets occur when the two-dimensional images are captured at an angle to the theoretical scanning axis of the transducer. Out-of-plane displacement offsets occur when the two-dimensional images are captured "off-centre" from the theoretical scanning axis, i.e. when the actual scanning axis of the transducer is parallel to, but displaced from, the theoretical scanning axis. It is desirable to compensate for these offsets so that inaccuracies in the final reconstructed image (leading to distortion of the final three-dimensional image) do not occur. Once the above data is stored in the data set in physical memory 82, the data set may be transferred to and stored in external file storage memory 88.

The paragraph starting from line 29 on page 11:

A3

In a ~~preffered~~ preferred embodiment, the data set is used to construct a "reverse map" for each type of data. A reverse map is a look-up table or a partial look-up table, which is used to determine the location within the succession of two-dimensional image slices of the particular pixels which must be retrieved from memory to produce the three-dimensional display image selected by the user. The reverse map is a static structure which, due to its small size relative to the volume data, allows for high-speed access to the volume data from planar samplings of the data. The principle of reverse mapping is known to those of skill in the art and will not be described in detail herein. A discussion of reverse mapping may be found in "Digital

A3 Concl.

Imaging Warping", George Wolberg, IEEE Press, 1990, the contents or which are incorporated herein by reference.

The paragraph starting from lines 16-19 on page 12:

A4

A schematic representation of a reverse map is shown in Figure 8. In Figure 8, U and V are Cartesian coordinates having an origin (0,0) at the top ~~right~~ left-hand corner. S1, S2 and S3 are edge views of successive acquired two-dimensional image slices.

The paragraph starting from line 28 on page 12:

A5

In Figures 9A and 9B, x and y are the dimensions of the two-dimensional image slices and z is the slice ~~or~~ of "frame" number. "A" indicates the axis or rotation for each type of data acquisition. P1 and P2 indicate the planes bounding the isomorphic sections of the raw data. The position of these planes will be dependent on the size and type of any offsets which occur in the ~~acquitition~~ acquisition of the two-dimensional image slices.

The paragraph starting from lines 29 on page 13:

A6

It will be apparent to a person of skill in the art, that it is not necessary to use a reverse map to provide rapid reconstruction of a three-~~dimensioanl~~ dimensional image ~~form~~ from the raw data once the calibration and orientation parameters are known. For example, it is possible to use a forward mapping technique in which the planar views of the desired image can be splatted by data values. The principles of this technique are discussed in "Digital Imaging Warping", George Wolberg, IEEE Press, 1990, the contents or which are incorporated herein by reference.